



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202 – 2733

October 25, 2018

Mr. Miguel Montoya
Quality Assurance Officer
New Mexico Environment Department
Surface Water Quality Bureau
P.O. Box 5469
Santa Fe, NM 87502-5469

Dear Mr. Montoya:

We have reviewed the Quality Assurance Project Plan (QAPP) entitled “*Upper Rio San Antonio Watershed On-the-Ground Restoration to Improve Water Quality*” for Clean Water Act 319 Cooperative Agreement C6-996101-17 submitted by Rocky Mountain Ecology. I am pleased to inform you that it was approved on November 14, 2018.

This new QAPP will expire on December 31, 2020. Should there be any changes to the QAPP at any time, please submit a revised document to EPA for approval. If the project continues under a new cooperative agreement and there are no substantive technical or programmatic changes, please submit a letter stating that no changes are needed. The letter or revised document is due at least 60 days prior to the expiration date.

Attached is the completed QAPP signature page for your records. In any future correspondence relating to this QAPP, please reference QTRAK #19-051. If you have any questions, you may contact me at (214) 665-2773.

Sincerely,

Leslie C. Rauscher

Leslie Rauscher
Project Officer
State/Tribal Programs Section

Attachment; sent via email, no hardcopy to follow.

New Mexico Environment Department

Surface Water Quality Bureau



Quality Assurance Project Plan

for

Upper Rio San Antonio Watershed On-The-Ground Restoration to Improve Water Quality
Tres Piedras Ranger District - Carson National Forest

Section 319 Grant 2017
Contract No. 18-667-2060-0005

October 2018

Submitted to:

New Mexico Environment Department
Surface Water Quality Bureau
1190 Saint Francis Drive
Santa Fe, NM 87502

Submitted by:

Rocky Mountain Ecology
P.O. Box 45193
Rio Rancho, NM 87174

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APPROVAL PAGE

QUALITY ASSURANCE PROJECT PLAN

for

Upper Rio San Antonio Watershed On-The-Ground Restoration to Improve Water Quality

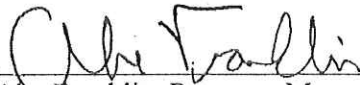
Approvals:

New Mexico Environment Department Surface Water Quality Bureau



Alan Klatt, Project Officer, Watershed Protection Section

Date: 10-11-18



Abe Franklin, Program Manager, Watershed Protection Section

Date: 10/11/2018



Miguel Montoya, Quality Assurance Officer, Standards, Planning and Reporting Team

Date: 10/11/18

United States Environmental Protection Agency Region VI



Sharon Daugherty, Project Officer, WQPD, EPA Region 6

Date: 11/14/18



Curry Jones, Chief State & Tribal Programs Section, WQPD, EPA Region 6

Date: 11/14/18

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ACRONYMS

CCC	Chimayo Conservation Corps
CPLA	Chama Peak Land Alliance
EPA	United States Environmental Protection Agency
HQCWF	High Quality Cold Water Fishery
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
QAPP	Quality Assurance Project Plan
QA	Quality Assurance
QAO	Quality Assurance Officer
RME	Rocky Mountain Ecology, LLC
SWQB	Surface Water Quality Bureau
TMDL	Total Maximum Daily Load
USFS	U.S. Forest Service
WBP	Watershed Based Plan
WQPD	Water Quality Protection Division

1.0 PROJECT MANAGEMENT

1.1 Distribution List

The distribution list, project roles and responsibilities for this project are outlined below in Table 1. The QA Officer will ensure that copies of this QAPP and any subsequent revisions are distributed to individuals who have signature authority to approve this QAPP. The SWQB Project Officer will ensure that copies of the approved QAPP and any subsequent revisions are distributed to all other project personnel listed in Table 1. All members of the distribution list who do not have signature authority to approve this QAPP will review the QAPP and sign the Acknowledgment Statement prior to initiating any work for this project under this QAPP. The signed Acknowledgment Statements (electronic or hard copy) will be collected by the SWQB Project Officer and will be given to the QA Officer for filing with the original approved QAPP.

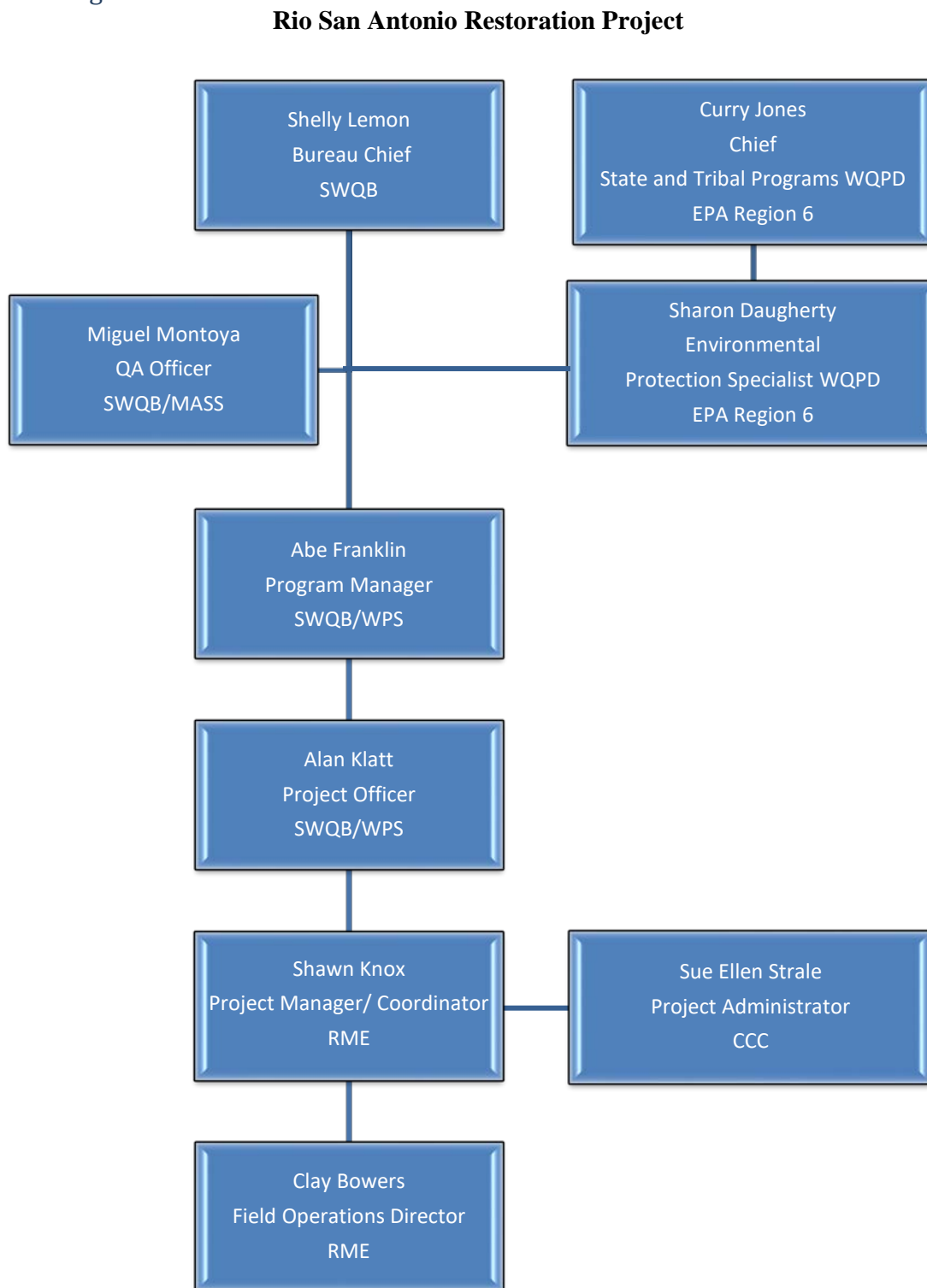
Table 1: Distribution List and Project Roles and Responsibilities

Name	Organization	Title/Role	Responsibility	Contact Information
Abe Franklin	SWQB	WPS Program Manager	Reviewing and approving QAPP, managing project personnel and resources	(505) 827-2793 abraham.franklin@state.nm.us
Miguel Montoya	SWQB	Quality Assurance Officer	Reviewing and approving QAPP	(505) 826-3794 miguel.montoya@state.nm.us
Alan Klatt	SWQB	Project Officer	Preparing QAPP, project reporting, coordinating with contractors.	(505) 827-2867 alan.klatt@state.nm.us
Shawn Knox	RME	Project Manager; Project Coordinator	QAPP preparation, data collection oversight, record keeping	(505) 992-6150 knox@rockymountaineology.com
Clay Bowers	RME	Field Operations Director	Data collection	(575) 639-3883 bowers@rockymountaineology.com
Suellen Strale	CCC	Project Administrator	Reporting, administration and oversight	(505) 351-1456 cycc@cybermesa.com
Sharon Daugherty	EPA	Environmental Protection Specialist WQPD, Region 6	Reviewing and approving QAPP	(214) 665-2259 daugherty.sharon@epa.gov
Curry Jones	EPA	Chief, State and Tribal Programs Section WQPD, Region 6	Reviewing and approving QAPP	(214) 665-6793 jones.curry@epa.gov

1.2 Project Organization

The SWQB Quality Management Plan (NMED-SWQB 2018) documents the independence of the QAO from this project. The QAO is responsible for maintaining the official approved QAPP. Figure 1 presents the project organizational chart and displays the hierarchy of the project.

Figure 1: Organization Chart



1.3 Problem Definition/Background

The purpose of this project is to implement on-the-ground restoration techniques within the Rio San Antonio and determine if such actions improved water quality.

Background

This project takes place in the upper Rio San Antonio priority stream reach, with the Assessment Unit (AU) Name “Rio San Antonio (Montoya Canyon to Headwaters),” ID: NM-2120.A_901 (Figures 2-4). The specific twelve-digit watershed is called “Canada Tio Grande-Rio San Antonio” (HUC: 130100050301). It is located on the Tres Piedras Ranger District of the Carson National Forest.

The Watershed Based Plan (WBP) which was prepared and approved for this project includes approximately 14 river miles and receives drainage from 34,408 acres (RME and CCC 2016). This project will implement the management measures described in Table 2. (below), and recommended in the approved WBP document on the Olguin Mesa Reach of the larger WBP area (Reaches 5 & 6 in the WBP & Figures 2-4), and focus on approximately 1.8 river miles that have the highest thermal loading in the area. (RME and CCC 2016). This reach is indicated by “beginning of project” (BOP) and “end of project” (EOP) in Figures 3 & 4. Restoration will occur beginning at the upstream extent of Reach 6 in the Olguin Mesa Reach, and terminate at the confluence with Cañon Largo (the downstream extent of Reach 5 of the Olguin Mesa Reach). Multiple canyons and/or streams drain into the Rio San Antonio within the project area, including Lagunitas Creek and Cañon Largo. The project area occurs between 8,750 and 9,400 ft (2,667 to 2,865 m) above sea level. The project area is defined by montane riparian and upper montane coniferous forest habitat types.

The project area has been previously recognized by the NMED as impaired, as indicated by their listing of the Rio San Antonio segment. The 2016-2018 303(d)/303(b) Integrated Report indicates the AU is listed as temperature, dissolved oxygen and *E. coli* impaired (NMED-SWQB 2016-2018). The TMDL lists nonpoint pollution sources of temperature impairment on the Rio San Antonio as: Range Grazing – Riparian or Upland; Flow Regulation/Modification; Removal of Riparian Vegetation; Streambank Modification or Destabilization; Natural and; Unknown (NMED-SWQB 2004). The reason that temperature impairment is a concern is that the impaired reach is designated by the State of New Mexico as a High Quality Cold Water Aquatic Life use (HQCW) (NMED-SWQB 2016-2018). Sections within the San Antonio Watershed Based Plan (WBP), “Identify the Causes and Sources of Impairment” and “Estimate of Load Reductions” contain more details of the water quality problems (RME and CCC 2016).

Beginning in 2012, Chimayo Conservation Corps (CCC), Rocky Mountain Ecology (RME) and Chama Peak Land Alliance (CPLA) initiated a stakeholder group that included specialists with the Carson National Forest Tres Piedras Ranger District, staff from NMED, members of Trout Unlimited, United States Forest Service (USFS) livestock permittees and members of the CPLA. Stakeholders met in the field to discuss concerns and make recommendations for implementation measures that would improve water quality and habitat throughout the watershed. Finally, as part of the stakeholder group development process, a WBP was prepared which was accepted by EPA in April of 2016.

The pollutant reduction goal for solar radiation is described below:

- The proposed project strives to reduce temperature loading by 84.40 j/m²/s (and increase shade from 16% to 55% post-implementation) on sub-sections of the Olguin Mesa Reach.

These numbers, reported in the TMDL and the WBP, were derived from modeling outputs within the program SSTEMP, Version 2.0.8 (NMED-SWQB 2004 & RME and CCC 2016).

EPA funding under Section 319 of the Clean Water Act provides resources to implement activities described in a document: *Upper Rio San Antonio Watershed On-The-Ground Restoration to Improve Water Quality – Workplan*. The workplan identifies indicators to document project success, including:

1. Survivorship of riparian plantings
2. Width/depth ratios
3. Photo-monitoring with before-after photographs
4. Sign-in sheets for participation in meetings

Baseline data collection tasks are outlined in the workplan and explained in detail in this QAPP. Procedures unique to the project will be included in this QAPP.

When changes affect the scope, implementation or assessment of the outcome, this QAPP will be revised to keep project information current. The Project Coordinator, with the assistance of the QA Officer, will determine the impact of any changes on the technical and quality objectives of the project. This QA Project Plan will be reviewed annually by the Project Coordinator to determine the need for revision.

This QAPP documents the quality requirements for *Upper Rio San Antonio Implementation Project*.

Objective

The primary goal of this project is to reduce thermal loading in the Olguin Mesa Reach of the Rio San Antonio. To achieve this goal, five management measures and corresponding project objectives are proposed as follows:

Table 2. Management Measures to Reduce Thermal Loading

Five Management Measures	Objective
#1 Riparian vegetation improvements	Increase shade from 16% to 55% at planting areas throughout, reduce thermal loading
#2 In-stream structure placement (large woody debris, boulders)	Increase stream depth in key locations, reduce thermal loading
#3 Small fence exclosures (~ 0-3 acres) around critical planting areas	Deter and prevent ungulate grazing in key planting areas to allow establishment of riparian cover which will reduce thermal loading
#4 Streambank and/or upland erosion control structures	Decrease sediment input and erosion at key locales to ultimately improve (reduce) thermal loading

#5 Engage local stakeholders through email lists and a field training	Expand and build upon local stakeholder engagement efforts to ensure ongoing success of on the ground implementation after the project concludes
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The monitoring objectives listed below for the project, are to collect the pre- and post-implementation data to measure project success.

1. Vegetation community structure
2. Percent canopy cover
3. Width/depth ratio and location of head-cuts/ Geomorphology
4. Visual changes as depicted from repeat photography
5. Water temperature

Data will be gathered during spring 2019 and summer/fall of 2019. Data collection will also be conducted in spring/summer 2020.

1.4 Project/Task Description

Description

The *Upper Rio San Antonio Implementation Project* will use the “Upstream and Downstream” method at locations immediately upstream and downstream of major tributaries (upstream of Lagunitas Canyon and downstream of Canyon Largo) to the Rio San Antonio within the 1.8 mile project corridor, to collect data and evaluate project success in achieving objectives described in Table 2.

Schedule

Monitoring is planned for two seasons, beginning with baseline data collection before implementation in the spring of 2019, and post-implementation data collection in summer/fall 2019 and spring/summer 2020. Specific metrics and corresponding methods are described below (Table 3).

Table 3: Schedule of Metrics and Methods

Metric/Methods	Indicator	Spring 2019	Summer/ Fall 2019 and Spring/Su mmer 2020
1. Vegetation community structure surveys: Install plots associated with each cross-section, to assess baseline vegetative structure of the riparian community and survivorship of plantings 2. Percent canopy cover: Collect canopy cover on each cross-section transect	Survivorship of riparian plantings	<u>X</u> <u>Comparable</u> <u>leaf-on</u> <u>between</u> <u>years</u>	<u>X</u> <u>Comparable</u> <u>leaf-on</u> <u>between</u> <u>years</u>

established, to ascertain baseline cover conditions within the project corridor.			
3. Stream geomorphology surveys: Longitudinal profile transects and cross-sectional transects will be used to determine stream width/depth ratio and shall be conducted at monitoring stations identified on Table 4. Surveys may also be conducted up and downstream of the major tributaries to the Rio San Antonio in the 1.8 project corridor. These will aid in assessing baseline impairments of the channel, regarding width to depth ratio, locating headcuts, etc.	Width/depth ratios	<u>X</u>	<u>X</u>
4. Visual changes: Install photo-monitoring points at monitoring stations identified in Table 4, geomorphology survey locations, planting locations and at all in-stream structures locations. These will aid in assessing changes in visual conditions of the stream corridor.	Before-after photographs	<u>X</u> <u>Comparable</u> <u>leaf-on</u> <u>between</u> <u>years</u>	<u>X</u> <u>Comparable</u> <u>leaf-on</u> <u>between</u> <u>years</u>
5. Water temperature: Install two water temperature dataloggers at key locales (at Monitoring Stations 1 and 2 shown in – Figure 4) within the project corridor, to establish baseline temperature conditions.	Temperature	<u>X</u>	<u>X</u>

Upper Rio San Antonio Implementation Project

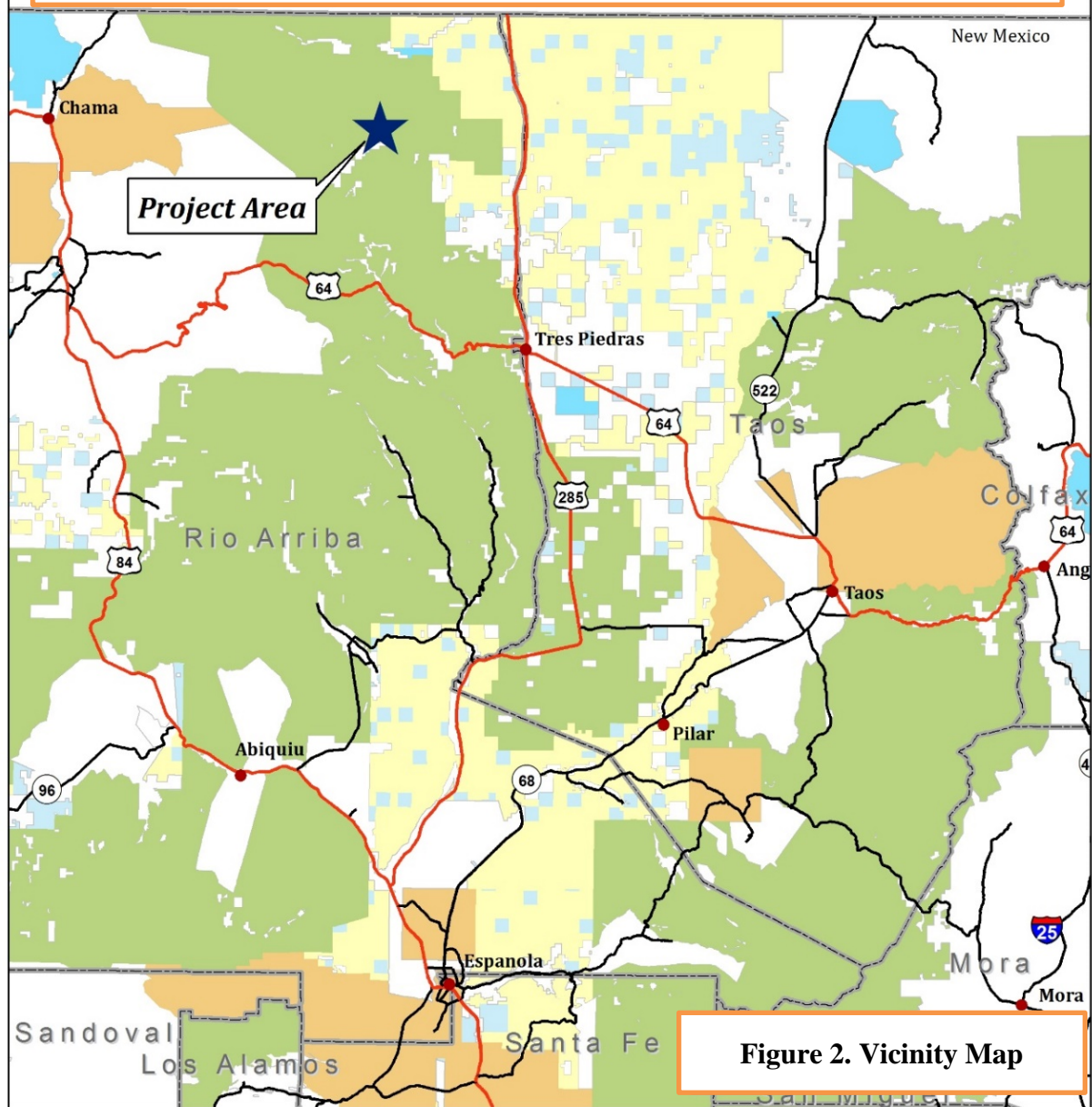
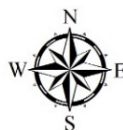


Figure 2. Vicinity Map

Legend

- US Highway
- State Highway
- ▭ County Boundary
- BLM
- USFS
- FWS
- BIA
- Private
- State
- Game & Fish

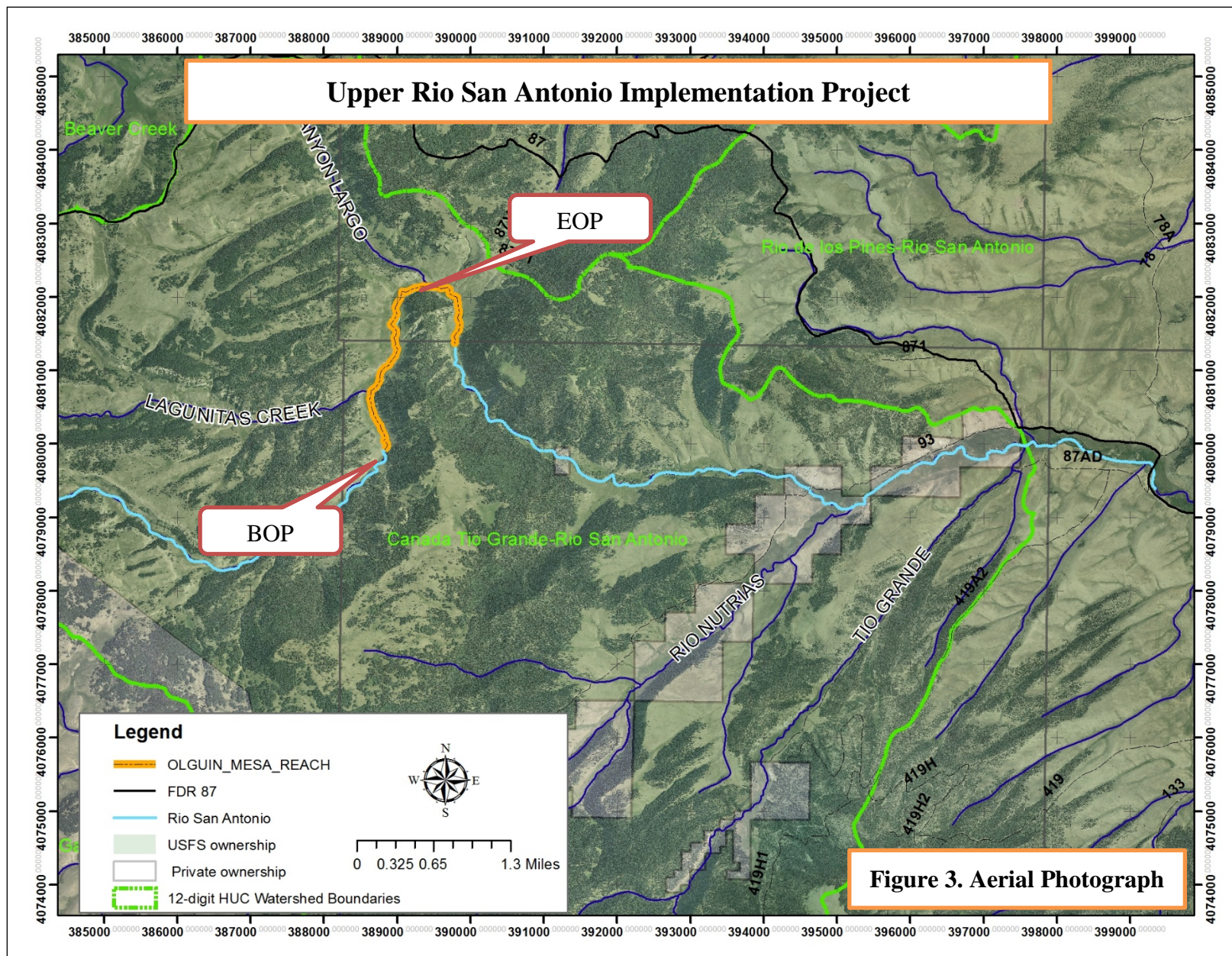
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Project Location



Map Created by Rocky Mountain Ecology, LLC March 2015



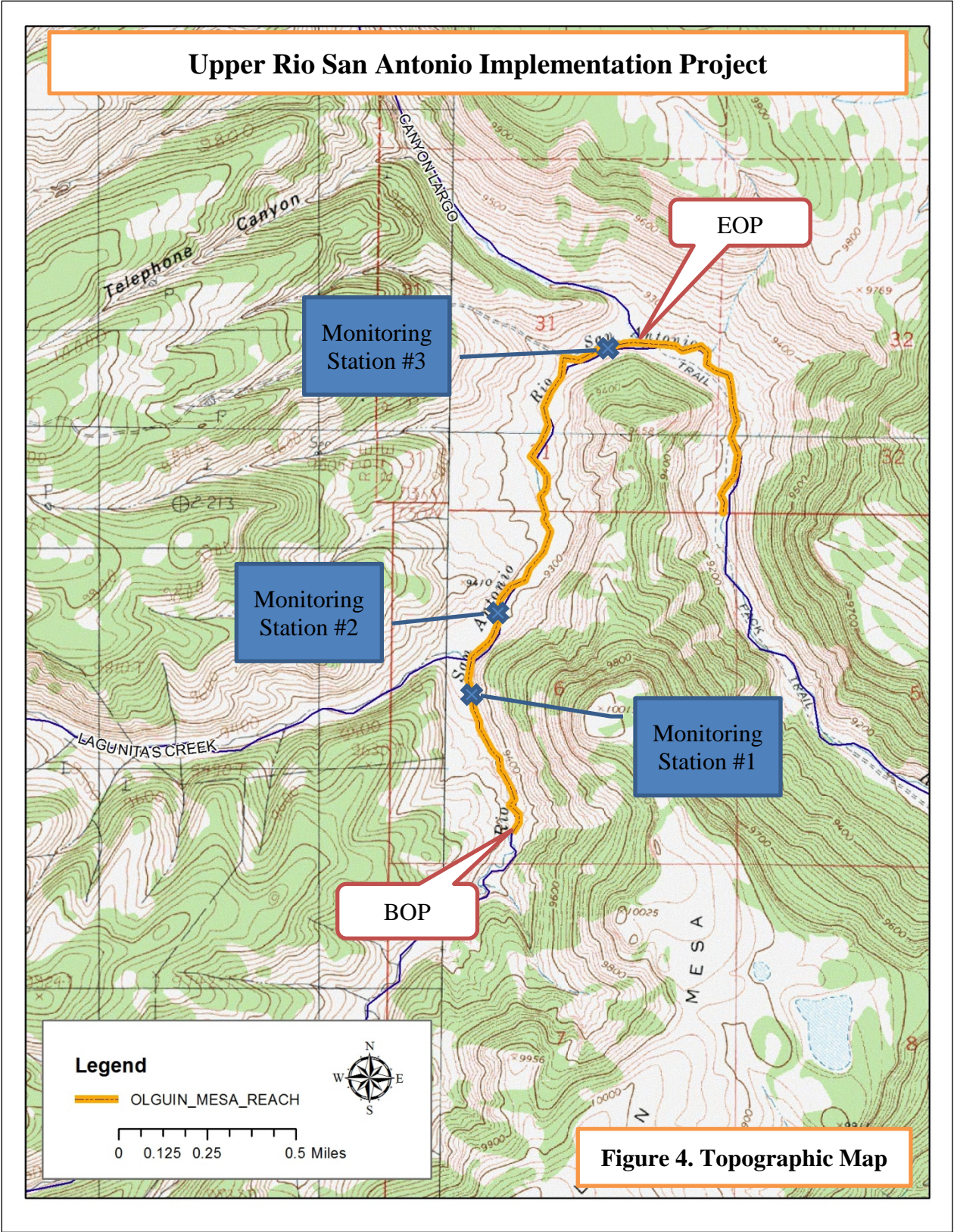


Table 4- Rio San Antonio Monitoring Stations (depicted on Figure 4)

Station	Description and Rationale
1	Upstream of the Lagunitas Canyon confluence
2	Downstream/ upstream of the Lagunitas/Canyon Largo confluences
3	Downstream of the Canyon Largo confluence

These stations have been selected to cover the range of reaches and tributaries in the project area. Data will be collected within 200 meters from the monitoring stations.

Table 5- Waterbody Attributes for Middle Rio San Antonio Monitoring Project

Waterbody	Assessment Unit ID	12- Digit HUC	12-Digit HUC Name
Rio San Antonio	NM-2120.A_901.	130100050202	Rio de Los Pinos – Rio San Antonio

1.5 Quality Objectives and Criteria for Measurement Data

Question/Decision

The Rio San Antonio Project is intended to answer the following question: Have the restoration activities in the Upper Rio San Antonio watershed lowered water temperatures on the Rio San Antonio?

Stated as a decision: The information gathered by the Rio San Antonio Water Quality Improvement Project will be used to decide whether the restoration activities in the Rio San Antonio watershed have lowered water temperatures and alleviated solar loading

Data Quality Objective

The quality of the data will be adequate to provide a high level of confidence in determining whether the restoration activities in the Upper Rio San Antonio watershed have lowered water temperature on Rio San Antonio.

Measurement Quality Objectives

The measurement quality objectives will be those used to demonstrate that staff and equipment used to conduct field measurements are within the scope of this QAPP and therefore, sufficient to achieve the Data Quality Objectives.

Table 6- Data Quality Indicators and Methods

DQI	Determination Methodologies
Precision	In order to increase precision of data collection in the field, a minimum of two field staff will be present during all data collection activities to ensure adherence to this QAPP and referenced methods. Ideally, to assure consistency and thereby precision, the same personnel will carry out the responsibilities of collecting, recording and analyzing data.

Bias	Bias will be reduced by using professional and experienced staff to collect and analyze data.
Accuracy	The basis for determining accuracy will be based on the sensitivity of the field equipment and the staff's expertise of the survey method for collecting data and ensuring the accuracy of the equipment being used is within the acceptable range of a particular survey.
Representative	Data collection will be representative of the project area specifically pre- and post-restoration areas.
Comparability	The data collected both before and after implementation of the workplan will be collected using the same methods in order to be comparable and ascertain the effectiveness of the project. In addition, the methods used for this project are similar to those used in other restoration projects with established quality assurance mechanisms for comparability so that results of this project may be comparable with other studies of a similar nature.
Completeness	Data collection will include all parameters at each field survey to ensure completeness and usability of the data.
Sensitivity	Sensitivity is ensured based on the manufacturer's specified range and accuracy of the equipment being used and the expertise of the field staff to use and apply data collection methods in a manner that minimizes subjectivity or gross data collection errors.

1.6 Special Training/Certification

No special training/certification is required of RME employees. Qualifications of all RME staff are listed at www.rockymountaineecology.com. RME will provide oversight of the data collection from all volunteers and will provide technical training prior to work.

1.7 Documents and Records

The SWQB Project Officer will distribute copies and any subsequent revisions to all individuals on the distribution list who do not have signature authority for approving the QAPP.

When changes affect the scope, implementation, or assessment of the outcome, this QAPP will be revised to keep project information current. The SWQB Project Officer, with the assistance of the QA Officer, will determine the effects of any changes to the scope, implementation, or assessment of the outcome on the technical and quality objectives of the project. This Project Plan will be reviewed annually by the Project Coordinator and SWQB Project Officer to determine the need for revision.

All field sheets will be verified before leaving the field, any data captured on a global positioning system (GPS), camera, smart phone, tablet, or laptop will be downloaded to a RME or CCC computer or an external hard drive at the end of each day.

All project documents including this QAPP, signed acknowledgement statements, protocol documents, field notebooks, calibration records, validation and verification records, recorded field data, in hard copy or in electronic form, and QC records will be maintained, and protected by the Project Coordinator. A copy will be made of all data and stored separately from the original data to

ensure the integrity of the raw data set. Project Coordinator will also prepare and maintain copies of project interim and final reports. All raw data, project documents and reports will be submitted quarterly to the SWQB Project Officer by RME Project Coordinator.

All project documents and all reports will be maintained by the SWQB Project Officer on the SWQB Network drive and in the project file at the SWQB in Santa Fe, NM.

2.0 DATA GENERATION AND ACQUISITION

2.1 Sampling Design

The study design currently consists of three monitoring stations (see Table 4 for monitoring station name/id and exact locations identified in Figure 4) which RME and CCC utilized during the development process of the WBP for the Upper Rio San Antonio Drainage Basin. These stations were located to capture temperature variations up- and down-stream of Lagunitas Creek and Canyon Largo confluences. RME staff will conduct an initial field reconnaissance prior to data collection in 2019. During the field reconnaissance RME staff may determine that additional monitoring locations are needed to properly document changes of stream temperature due to implementation of management measures within the 1.8 mile project corridor.

At a minimum, RME will conduct vegetation, percent canopy cover, and stream geomorphology surveys at all three (3) monitoring location identified in Table 4. Data for each survey will be collected in conjunction with one another during spring 2019 and summer/fall 2019. Surveys will be conducted by at least two (2) individuals at all times and completed twice a year for 2019. Data collection for 2020 will only occur once in the 2020 monitoring year and will be conducted in spring/summer 2020. Stream temperature data loggers will be installed at Stations 1 and 2 identified in Table 4. Stream temperature data loggers will be deployed in June 2019 and 2020 if time permits. Thermograph stream temperature loggers will continuously record stream temperature data June through first week of August of each year. Stream temperature data will be shuttled from thermograph loggers by RME staff at least every 30 days to minimize loss of data due to unforeseen circumstance such as flash flooding. Stream temperature data loggers will be removed by RME in August 2019 prior to management measure implementation and reinstalled in June 2020 and removed again in August 2020 (See Section 2.2 below for sampling methodologies.) Due to time constraints in summer 2020, the SWQB Project Officer will coordinate retrieval of deployed thermograph loggers if needed.

Stream geomorphology surveys will also be conducted at all proposed in-stream structure sites (management measure #2) by RME pre and post implementation to document changes in stream characteristics. Stream geomorphology surveys may also be conducted up and downstream of the major tributaries of the Rio San Antonio in the 1.8 project corridor.

Vegetation surveys will be conducted by RME at all stream cross-sections transects and all management measure locations excluding management measure 5. This will document changes in greenline vegetation due to implementation of management measures.

Percent Canopy cover will be conducted by RME at all proposed planting sites (management measure #1), all proposed exclosures (management measure #3) and at all proposed in-stream

structure sites (management measure #2) within the 1.8 mile project corridor pre and post implementation of management measures. Collecting percent canopy cover will provide documentation of change in percent shade due to vegetation growth in proposed study areas and determine if exclosures were effective in deterring and preventing ungulate grazing. RME will also do a comparable leaf-on analysis of all vegetation planted at the end of the 2019 and 2020 monitoring year.

Photo point documentation will be conducted by RME at all proposed management measure (Table 2. #1-4) locations to document physical change due to the implementation of management measure. Photo point documentation will also be conducted at monitoring stations identified on Table 4.

A sign in sheet will be used at all educational outreach events to document participation by stakeholders, volunteers, and other interested parties.

1. Vegetation:

- Baseline vegetation data (species composition, percent cover) shall be collected utilizing the greenline method (Winward 2000) at the monitoring stations, and/or in the proposed planting areas within the 1.8 mile project corridor. Other vegetation plots may be established if deemed necessary after field reconnaissance, and prior to implementation.

2. Percent Canopy Cover:

- Baseline canopy cover data following the method in Section 2.2, shall be collected at the monitoring stations and/or in the proposed planting areas within the 1.8 mile project corridor. Other canopy cover transects may be established if deemed necessary after field reconnaissance, and prior to implementation.

3. Geomorphology:

- Standard stream cross-sections to evaluate width-depth ratio will be installed at the monitoring stations and/or in the proposed in-stream structure areas within the 1.8 mile project corridor. Other cross-sections or longitudinal profiles may be established if deemed necessary after field reconnaissance, and prior to implementation.

4. Photo points:

- Baseline photo-points shall be collected at each monitoring station, and/or at each vegetation and geomorphic cross section location, within the Rio San Antonio in the 1.8 mile project corridor. Other photo point locales may be established if deemed necessary after field reconnaissance, and prior to implementation.

5. Temperature:

- Deploy two temperature dataloggers at the monitoring stations determined from field reconnaissance :
 - Temperature dataloggers (thermographs) shall be deployed, and data collected at monitoring stations 1 and 2 (upstream and downstream of the Lagunitas Creek drainage).

2.2 Sampling Methods

Following are the data sources for the aforementioned data metrics:

1. Vegetation:

- Protocol Source: *Monitoring the Vegetation Resources in Riparian Areas* (Winward 2000).
 - Baseline vegetation cross section composition and greenline composition data will be sampled according to procedures described in Winward (2000).

2. Canopy Cover:

- Protocol Source: *The 2016 NMED-SWQB Standard Operating Procedures For Physical Habitat Measurements* (NMED 2016).
 - Baseline canopy cover data will be sampled according to Percent Canopy Cover section of the NMED/SWQB Physical Habitat SOP.

3. Geomorphology:

- Protocol Source: *Stream Channel Reference Sites: An Illustrated Guide to Field Technique* (Harrelson, et al 1994).
 - Geomorphological conditions will be assessed using standard cross section and longitudinal measurements described by Rosgen, (1996) and cited in Harrelson, et al. (1994) which will measure cross section profile, depth, and width, up and downstream of each major tributary. At minimum, one longitudinal profile will be established at in conjunction with each monitoring station that and/or stretches through locales of in-stream structure placement.

4. Photo points:

- Protocol Source: *Monitoring the Vegetation Resources in Riparian Areas* (Winward 2000); *Stream Channel Reference Sites: an Illustrated Guide to Field Technique* (Harrelson, et al 1994).
 - Baseline, permanent photo-points will be established according to methods described in Harrelson et al (1994) at geomorphic cross sections, and Winward (2000) at vegetation cross sections. These will provide a baseline visual reference. These sites will be marked with rebar and the Global Positioning System (GPS) coordinates documented.
 - Other photo point locales may be established if deemed necessary after field reconnaissance.

5. Water temperature:

- Protocol Source: *The 2016 NMED-SWQB Standard Operating Procedures for Temperature Data Loggers (Thermographs)*
 - Onset Corporation HOBO temperature dataloggers will be deployed according to all applicable sections of the NMED-SWQB SOP for

Temperature Data Loggers. Data will be collected at Monitoring Stations 1 and 2 shown in Figure 4. A field reconnaissance will be conducted within the 1.8 mile project reach prior to data collection in 2019, if determined from that field reconnaissance it is necessary additional temperature monitoring sites will be added.

2.3 Sample Handling and Custody

Because there are no plans to collect samples for laboratory analysis, there no handling requirements.

2.4 Analytical Methods

Because there are no plans to collect samples, no analytical methods are needed.

2.5 Quality Control

For this project, the QC activities are those needed to assess and demonstrate the reliability of the data.

RME staff or volunteers will conduct the cross section measurements, photo point installations, canopy cover measurements, and riparian structure. RME staff have collected these data following these exact protocols during preparation of the WBP for this project (RME and CCC 2016), and quality of those data were approved by the NMED SWQB. The RME Project Coordinator will QA/QC all data collection for accuracy and precision.

2.6 Instrument/Equipment Testing, Inspection and Maintenance

A laser level will be used to collect cross-section and longitudinal profile data. The laser level will be tested against a pre-determined and verified elevation, determined in the field with sub-meter accurate Juniper Geode © global positioning system. No other equipment will be utilized that needs testing.

2.7 Instrument/Equipment Calibration and Frequency

It should be possible to show that all data were collected with monitoring devices that can be shown to have been properly calibrated. Calibration requirements, methods and standards, and procedures for the maintenance of calibration records are specified in the SWQB QAPP. For this project, no instrument calibration will be necessary.

2.8 Inspection/Acceptance of Supplies and Consumables

These criteria are not applicable to this data sampling effort.

2.9 Non-direct Measurements

No non-direct measurements used during the course of this project will affect the quality of data related to this project.

2.10 Data Management

All electronic data will be uploaded to RME computers at the end of each week that field sampling by personnel, occurs. Field notebooks will be utilized, and those data will be scanned and uploaded to RME computers daily. Those data will then be inspected for quality assurance and control, to minimize error, by the Project Coordinator. Those data will then be backed up on an external drive and on the Carbonite © cloud system, to ensure secure storage. Electronic data will also be stored by the Project Officer on the SWQB network in specific project folder.

3.0 ASSESSMENT AND OVERSIGHT

3.1 Assessment and Response Actions

Assessments and response actions will be reported as described below in 3.2. The SWQB Project Officer will provide project oversight by periodically assisting with and/or reviewing data collection efforts, twice per year during the life of the project. The Project Officer will assess project progress to ensure the QAPP is being implemented as approved. The Quality Assurance Officer may conduct periodic audits, as needed. Any problems encountered by any project staff during the course of this project will be immediately reported to the Project Officer who will consult with appropriate individuals to determine appropriate action. Should the corrective action impact the project or data quality, the Project Officer will alert the Quality Assurance Officer. If it is discovered that monitoring methodologies must deviate from the approved QAPP, a revised QAPP must be approved before work can be continued. All problems and adjustments to the project plan will be documented in the project file and included in the final report.

3.2 Reports to Management

Quarterly reports are submitted by the contractor (CCC) to the SWQB Project Officer and include progress of project implementation and any available data. Printouts, status reports or special reports for SWQB or EPA will be prepared upon request. Separate annual monitoring reports (prepared by CCC) will also be provided and included in the final report. The SWQB Project Officer will be responsible for maintaining project progress in the EPA Grants Reporting and Tracking System and the final report, and all other required project deliverables to be submitted to the EPA under this grant.

4.0 DATA VALIDATION AND USABILITY

4.1 Data Review, Verification and Validation

Data will be reviewed by the Project Coordinator for quality control. The Project Coordinator will manage the data. Data will be considered usable if there is reasonable evidence that the requirements of this QAPP were followed.

4.2 Validation and Verification Methods

The Project Coordinator will ensure that valid and representative data are acquired, through a weekly review of data for accuracy. Verification of field sampling and will occur in the review of data for completeness and accuracy, performed by the Project Coordinator. Data will then be provided by the Project Coordinator to the SWQB Project Officer for their review. In the event questionable data are found, the SWQB Project Officer will consult with project personnel to determine the validity of the data. Results of the verification process (weekly review of the data for accuracy) will be included in the final reports.

4.3 Reconciliation with User Requirements

The user requirement is a restatement of the data quality objective: The quality of the data will be adequate to provide a high level of confidence as to if the proposed implementation measures achieved their desired effects.

If project results do not meet this requirement, then additional monitoring may be necessary to fill in data gaps or it may be necessary to extend the monitoring period to measure effects that were not apparent during the project period.

5.0 REFERENCES

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Acknowledgement Statement



New Mexico Environment Department - Surface Water Quality Bureau

Upper Rio San Antonio Watershed On-The-Ground Restoration to Improve Water Quality Quality Assurance Project Plan Acknowledgement Statement

This is to acknowledge that I have received a copy (in hard copy or electronic format) of the *Upper Rio San Antonio Implementation Quality Assurance Project Plan*.

As indicated by my signature below, I understand and acknowledge that it is my responsibility to read, understand, become familiar with and comply with the information provided in the document to the best of my ability.

Signature

Name (Please Print)

Date

Return to SWQB Project Officer (Alan Klatt)